Doing Our Part to Create a Better Future for All...

Core Environmental Policy

The Mitsubishi Electric Group promotes sustainable development and is committed to protecting and restoring the global environment through technology, through all its business activities, and through the actions of its employees.

Environmental Vision 2021

Making Positive Contributions to the Earth and its People through Technology and Action

Preventing Global Warming

- Reduce CO_2 emissions from product usage by 30%
- Reduce total CO_2 emissions from production by 30%
- Aim to reduce CO_2 emissions from power generation

Creating a Recycling-Based Society

- Reduce, reuse and recycle "3Rs" products reduce resources used by 30%
- Zero emissions from manufacturing reducing the direct landfill of waste to zero

Ensuring Harmony with Nature
Fostering Environmental Awareness

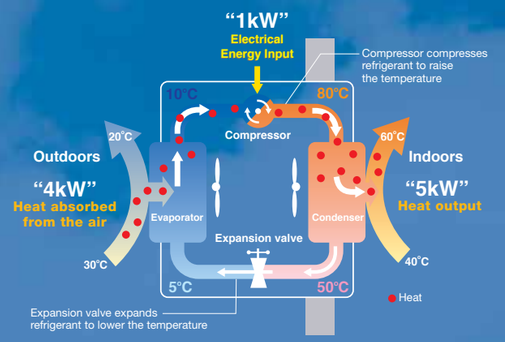
Mitsubishi Electric reflects the essence of this policy and vision in all aspects of its air conditioner business as well.

Preventing Global Warming

Heat pump technology inspires Mitsubishi Electric to design air conditioners that harmonize comfort and ecology.

Heat Pump Principle (When Heating) <Case of COP 5.0>

Refrigerant and Heat Circulation



Output energy is quintuple of input energy

"1kW" Electrical Energy Input
+
"4kW" Heat Absorbed from the air
=
"5kW" Heat Output

Mitsubishi Electric develops technologies to balance comfort and ecology, achieving greater efficiency in heat pump operation.

	Comfort	Ecology
1. Inverter	Faster start-up and more stable indoor temperature than non-inverter units.	Fewer On/Off operations than with non-inverter, saving energy.
2. i-see Sensor	Monitoring the temperature gaps between the floor and the set temperature to prevent deficient warming.	Optimum control of the airflow to prevent excessive compressor operation for more efficient heating operation.
3. Flash Injection	Achieves high heating capacity even at low temperatures, plus faster start-up compared to conventional inverters.	Expands the region covered by heat pump heating system.

Creating a Recycling-Based Society

1. **All models are designed for RoHS and WEEE compliance.***
2. **Mitsubishi Electric develops downsizing technology to reduce materials use.**
   - **PUHZ-RP200/250YHA2: Volume reduction approx. 60% compared to PUHZ-RP200/250YHA**
   - **MUZ-GC25VA & MUZ-HC25/25VA: Volume reduction approx. 25% compared to MUZ-GA25 & MUZ-HA25/35VA**

* WEEE and RoHS directives: The Waste Electrical and Electronic Equipment (WEEE) Directive is a recycling directive for this type of equipment, while the Restrictions of Hazardous Substances (RoHS) Directive is an EU directive restricting the use of six specified substances in electronic and electrical devices. In the EU, it is no longer possible (from July 2006) to sell products containing any of the six substances.

Ensuring Harmony with Nature/ Fostering Environmental Awareness

In striving to heighten the eco-awareness of its employees, Mitsubishi Electric provides education in RoHS, WEEE and other environmental regulations, along with environmental education targeting second and third-year workers.

CONTROL TECHNOLOGIES

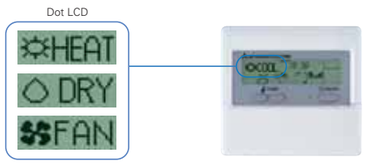
Newly Developed Advanced MA Remote Controller — A Progressive Step in the Evolution of Air Conditioning Control

PAR-21MAA

Dot Liquid-crystal Display Adopted

The adoption of dot liquid-crystal display (LCD) technology and a large display screen for the control panel optimises visibility. Operation and control status are easily read at a glance.

Display Example [Operation Mode]



Easy To Read & Easy To Use

First Multi-language Display in the Industry

Multi-language

Control panel operation in eight different languages.

Choose the desired language, among the following languages.

1st in the Industry!

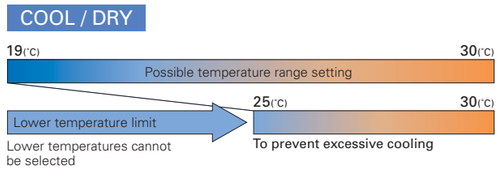
Energy-efficient Control

Operation Control Function

Limited Temperature Range Settings

Air conditioner operation restricted to within a specified operating range

Set the upper and lower limits for the temperature range during operation. Excessive heating or cooling is prevented, leading to increased energy savings.



Recommended for: Office, Restaurant

Auto-off Timer

Automatically turns off air conditioner

Set the time for the air conditioner to turn off automatically. The timer can be set in the range from 30 minutes up to 4 hours in 30-minute intervals.

The "Simple Timer"—starts/stops in units of 1 hour in a 72-hour period—is set at the time of shipment from the factory. It can be changed to the "Auto-off Timer" function using the remote controller.

Recommended for: Meeting room

Operation Lock

Prevent operation settings from being changed

Units can be set so that the operation mode cannot be changed. When "Operation Lock" is activated, new temperature setting commands are not accepted, thereby ensuring that the unit runs in the specified (locked in) temperature range. This promotes energy savings and prevents erroneous/ mischievous operation.

Only the administrator can change settings when using the Operation Lock mode.

Recommend to use in: Office, School / Private school, Public facility like public hall, Hospital, Server room

Weekly Timer – Introduced in Response to Market Demand

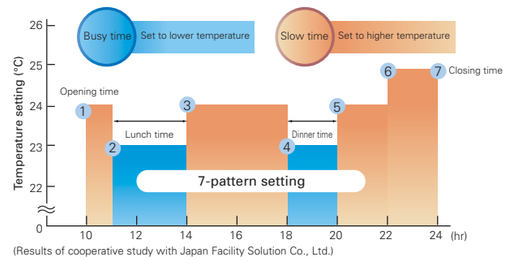
Control temperature on a weekly basis

Temperature settings and On/Off control can be managed over a period of one week using the Weekly Timer. Up to eight setting patterns per calendar day are possible.

Economical & Space Saving

PAR-20MAA Conventional MA Remote Controller + PAC-YT34STA Schedule Timer ▶ PAR-21MAA Remote Controller

Setting Example (restaurant in summer time)



(Results of cooperative study with Japan Facility Solution Co., Ltd.)

Setting the temperature 1°C higher for cooling and 1°C lower for heating leads to an energy savings of approximately 10%.

Approximate 10%* Energy Savings

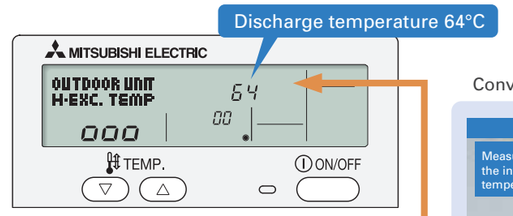
*Based on in-house calculations

Easy Maintenance Function (Mr. Slim Power Inverter only)

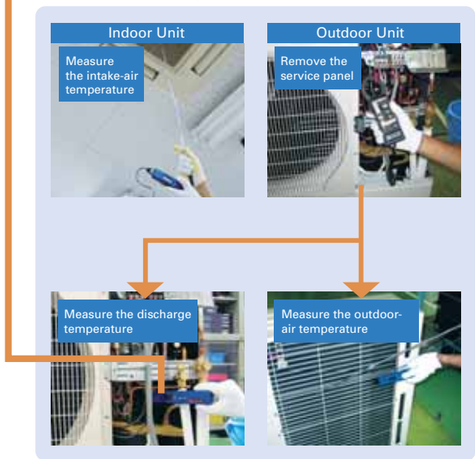
POWER INVERTER

- Nearly maintenance-free operation
- Monitor operation data of the indoor and outdoor units via the remote controller.

Remote controller also lets you set the operating frequency, allowing easier inspection.



Conventional Inspection Work



Easy Maintenance Information

Compressor		Outdoor Unit		Indoor Unit	
①	Accumulated operating time (x10hr)	④	Heat exchanger temperature (°C)	⑦	Intake-air temperature (°C)
②	Number of ON/OFF times (x100 times)	⑤	Discharge temperature (°C)	⑧	Heat exchanger temperature (°C)
③	Operating current (A)	⑥	Outdoor-air temperature (°C)	⑨	Filter operating time* (hr)

*The filter operating time is the time elapsed since the filter button was reset.

Refrigerant Leakage Check (Mr. Slim Power Inverter only)

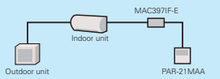
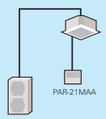
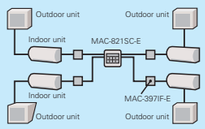
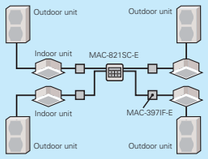
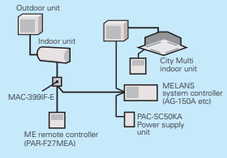
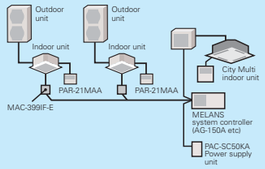
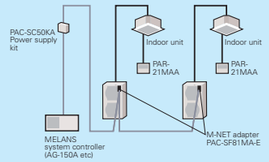
POWER INVERTER

The Mr. Slim Power Inverter units come equipped with a useful new "Refrigerant Leakage Check" function. Using a wired remote controller, it is easy to check if refrigerant has been lost over a long period of use. This reduces service time and gives an added sense of safety.

SYSTEM CONTROL

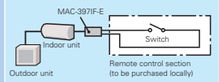
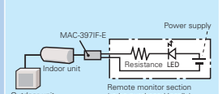
Versatile system controls can be realised using optional parts, relay circuits, control panels, etc.

MAJOR SYSTEM CONTROL

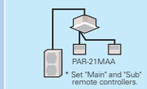
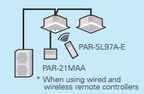
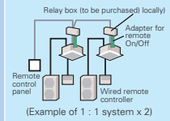
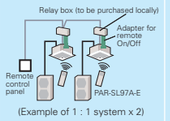
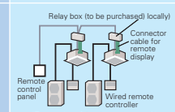
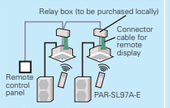
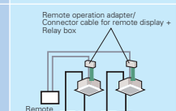
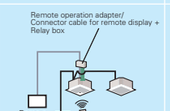
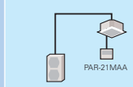
	System Examples		
Indoor Unit	M Series Indoor Unit	S Series & P Series Indoor Unit	P Series Indoor Unit
Outdoor Unit	M Series and MXZ Series Outdoor	S Series and MXZ Series Outdoor	P Series Outdoor
PAR-21MAA Control			
Details	• Wired remote controller can be connected to indoor unit	Standard equipment (for indoor units compatible with wired remote controllers)	
Major Optional Parts Required	• MAC-397IF-E (Interface) • PAR-21MAA (Wired remote controller)	• PAR-21MAA (Wired remote controller)	
System Group Control			
Details	• One remote controller can control plural air conditioners with the same settings simultaneously. • One remote controller can control up to 16 refrigerant systems. (When connected to a MXZ unit, MAC-397IF-E is counted as one system.) • Up to two remote controller can be connected.		
Major Optional Parts Required	• MAC-397IF-E (Interface) • PAR-21MAA (Wired remote controller)		
Centralised On/Off Control			
Details	• Up to 8 indoor units can be switched On/Off with one remote controller.		
Major Optional Parts Required	• MAC-397IF-E (Interface) • MAC-821SC-E (Centralised remote controller)		
M-NET Connections			
Details	• Group of air conditioners can be controlled by MELANS system controller (M-NET).		
Major Optional Parts Required	• MAC-399IF-E (M-NET Interface) • MELANS System controller • PAC-SC50KA (power supply unit)		• PAC-SF81MA-E (M-NET converter) • MELANS System controller • PAC-SC50KA (power supply unit)

OTHERS

For M Series Indoor Units (New A-control Models Only)

	System Examples	Connection Details	Control Details	Major Optional Parts Required
1 Remote On/Off Operation • Air conditioner can be started/stopped remotely. (1 and 2 can be used in combination)		Connect the interface to the air conditioner. Then connect the locally purchased remote controller to the terminal in the interface.	On/Off operation is possible from a remote location.	• **MAC-397IF** (Interface) • Parts for circuit such as relay box, lead wire, etc. (to be purchased locally)
2 Remote Display of Operation Status • The On/Off status of air conditioners can be confirmed remotely. (1 and 2 can be used in combination)		Connect the interface to the air conditioner. Then connect the locally purchased remote controller to the terminal in the interface.	The operation status (On/Off) or error signals can be monitored from a remote location.	• **MAC-397IF-E** (Interface) • Parts for circuit to be purchased locally (DC power source needed)

For P Series and S Series Indoor Units

	System Examples		Details	Major Optional Parts Required
	Wired remote controller	Wireless remote controller		
A 2-remote Controller Control With two remote controllers, control can be performed locally and remotely from two locations.	 (Example of 1 : 1 system)	 (Example of Simultaneous Twin)	• Up to two remote controllers can be connected to one group. • Both wired and wireless remote controllers can be used in combination.	• Wired Remote Controller **PAR-21MAA** • Wired Remote Controller Kit for PKA **PAR-21MAAT-E** • Wireless Remote Controller **PAR-SL97A-E** (Except for SLZ) • Wireless Remote Controller Kit for PCA **PAR-SL99B-E**
B Operation Control by Level Signal Air conditioner can be started/stopped remotely. In addition, On/Off operation by local remote controller can be prohibited/permitted.	 (Example of 1 : 1 system x 2)	 (Example of 1 : 1 system x 2)	• Operation other than On/Off (e.g., adjustment of temperature, fan speed, and airflow) can be performed even when remote controller operation is prohibited. • Timer control is possible with an external timer.	• Adapter for remote On/Off **PAC-SE55RA-E** • Relay box (to be purchased locally) • Remote control panel (to be purchased locally)
C Operation Control by Pulse Signal	 (Example of 1 : 1 system x 2)	 (Example of 1 : 1 system x 2)	• The pulse signal can be turned On/Off. • Operation/emergency signal can be received at a remote location.	• Connector cable for remote display **PAC-SA88HA-E / PAC-725AD (10 pcs. x PAC-SA88HA-E)** • Relay box (to be purchased locally) • Remote control panel (to be purchased locally)
D Remote Display of Operating Status Operating status can be displayed at a remote location.	 (Example of 1 : 1 system)	 (Example of Simultaneous Twin)	• Operation/emergency signal can be received at a remote location (when channeled through the **PAC-SF40RM** → no-voltage signal, when channeled through the **PAC-SA88HA-E** → DC 12V signal).	• Remote display panel (to be purchased locally) • Connector cable for remote display **PAC-SA88HA-E / PAC-725AD (10 pcs. x PAC-SA88HA-E)** • Relay box (to be purchased locally) • Remote operation adapter **PAC-SF40RM** *Unable to use with wireless remote controller • Remote display panel (to be purchased locally)
E Timer Operation Allows On/Off operation with timer *For control by an external timer, refer to B Operation Control by Level Signal.	 (Example of 1 : 1 system)		• **Weekly Timer:** On/Off and up to 8 pattern temperatures can be set for each calendar day. (Initial setting) • **Simple Timer:** On/Off can be set once each within 72 hr in intervals of one hour. • **Auto-off Timer:** Operation will be switched off after a certain time elapse. Set time can be changed from 30 min. to 4 hr. at 30 min. intervals. *Simple Timer and Auto-off Timer cannot be used at the same time.	Standard functions of **PAR-21MAA**